

REMARKS

Claims 7 and 24 have been canceled. Claims 1, 3, 5, 6, 8, 9, 11 and 13-23 are active in the case. Claims 17-23 stand withdrawn from consideration. Reconsideration is respectfully requested.

Claim Amendments

Claim 1 has been amended by limiting the range of the SrO component of the glass to a minimum of 10.6 % as supported by the text of Example 1 and by limiting the range of the TiO₂ component of the glass to a minimum of 1 % as supported by the text at page 10, line 21. Further, the limitation of Claim 7 has been incorporated into the claim.

Most of the remaining active claims have been amended in order to make minor language changes thereto, none of which are believed to have introduced new matter into the case. Entry of the amendments is respectfully requested.

Claim Rejection, 35 USC 112

The rejection of Claim 1 on non-reference grounds is believed obviated by the amendment made to Claim 1 by which the phrase objected to has been deleted. Withdrawal of the rejection is respectfully requested.

Invention

The present invention is directed to a silica-alumina based glass composition which is useful as a glass in the manufacture of a data storage medium such as a magnetic disc. As such, the composition of the invention as now claimed consists essentially of 40 to 59 % SiO₂, 5 to 20 % Al₂O₃, 0 to 8 % B₂O₃, 0 to 10 % MgO, 0 to 12 % CaO, 10.6 to 20 % SrO, 0 to 2 %

BaO, 0 to 4 % ZnO, 0 to 2 % Li₂O, 0 to 10 % Na₂O, 0 to 8 % K₂O, 1 to 10 % TiO₂ and 0 to 5 % ZrO₂, wherein MgO + CaO + SrO + BaO is at least 15 %; Al₂O₃ + TiO₂ is at least 11 % and TiO₂ + ZrO₂ is at least 2.3 %, all amounts given in terms of percent by weight.

Prior Art Rejection, 35 USC 103

As to the matter of the rejection of the claims over the Kohli et al '152 patent, the same discloses a silica/alumina glass that contains a number of the oxide components of the presently claimed glass. The reference at column 2, lines 28-36 also discloses that other optional oxides may be present in the glass including ZnO and TiO₂, none of which optional oxides should exceed 5 % by wt of the glass composition in total. Clearly, if TiO₂ is present in the glass of the patent, it is present in a very minor amount, which teaching applicants believe does not suggest the TiO₂ limitation of the present claims of the presence of the oxide in an amount ranging from 1 to 10 %, coupled with the requirement in the present claims of the combined total of TiO₂ and ZrO₂ of 2.3 % by wt and the combined total of Al₂O₃ + TiO₂ of at least 11 % by wt. As to Al₂O₃ and ZrO₂, the patent discloses only that one of the oxides is mandatory and the other is optional, with no teaching whatever of a significance of the combination of TiO₂ with each of the two oxides in particular amounts relative to properties of the resulting glasses. That, in fact, these limitations of the combination of TiO₂ with each of alumina and zirconia are important in the present invention is evident from the data in Table 1 of the specification, particularly Examples 1-9 and 11 to 15. The Table provides N_L and N_S data for these examples that relate to the weather resistance of glass samples as discussed on page 15 of the application. It is clear from the N_L / N_S values presented for these examples that the glass compositions exhibit excellent weathering resistance. On the other hand, the text of the Kohli et al patent provides no such teaching of weathering resistance of

the glass compositions disclosed and, in fact, does not disclose any objective or reason for inclusion of TiO_2 in the oxide ingredients of a glass composition. Accordingly, it is clear that the patent does not suggest the glass composition as claimed and withdrawal of the ground of rejection raised under 35 USC 103 is respectfully requested.

Claims 1, 3, 5-9, 11, 13-15 and 24 stand rejected based on 35 USC 103(a) as obvious over Maeda et al, U. S. Patent 5,599,754. This ground of rejection is respectfully traversed.

Although the Maeda et al '754 patent discloses a glass composition based on silica/alumina that contains a number of the oxide components of the present glass, it nevertheless should first be noted that while the patent discloses a SrO content of 6-9 wt %, the present claims as now amended, in clear distinction from the patent, require a minimum of 10.6 wt % SrO. This distinction is important in view of the stated properties which the SrO contributes to the present glass composition of lowering the viscosity of the molten glass and facilitating the melting of the glass, while also increasing the expansion coefficient of the glass. In the reference, the presence of SrO seems to only be stated in terms of effecting the thermal expansion coefficient of the glass.

It also should be noted that the patent discloses that TiO_2 is an optional component of the glass disclosed in an amount of up to 5 % by wt in total along with other oxide components of La_2O_3 , SnO_2 and ZnO . Further, with respect to the alumina and zirconia components of the glass, they are present in respective amounts of 5 to 12 wt % and 0.2 to 6 wt %. Importantly, however, nothing is stated in the patent as to any relationship each separately has with TiO_2 . There is nothing in the patent which would indicate that the combined presence of TiO_2 and Al_2O_3 should be at least 11 % of a glass formulation and that the combined presence of TiO_2 and ZrO_2 should be at least 2.3 % of a glass formulation. This is significant in light of the discussion of these limitations above as to the influence of these

limitations on the resulting weathering resistance properties of the present glass. Accordingly, it is believed that the reference does not suggest the present invention and withdrawal of the ground of rejection is respectfully requested.

Claims 1, 3, 5-9, 11, 13-16 and 24 stand rejected based on 35 USC 103(a) as obvious over Speit et al, U. S. Patent 6,162,751. This ground of rejection is respectfully traversed.

The Speit et al '751 patent discloses a glass composition based on silica/alumina that contains a number of the oxide components of the present glass. However, a very clear distinction between the present glass composition and that of the patent is that whereas the patent teaches a sum of barium and strontium oxides of 0 to 8 wt %, the combined amount of these two oxides in the glass of the present invention is at least 10.6 wt % up to 22 wt %. Thus, the disclosure of Speit et al does not suggest the glass composition of the present invention to one of skill in the art who would have to be motivated to employ significantly greater amounts of SrO in a glass formulation in order to arrive at a glass composition containing Sr and Ba oxides in amounts taught in the present invention.

Applicants note also that there is no disclosed relationship taught between TiO_2 and Al_2O_3 in the reference. On the other hand, as noted above, the present claims require the sum of TiO_2 and Al_2O_3 to be at least 11 % by wt in order that the product glass might have the weathering resistance properties of a glass of the invention. Clearly, Speit et al does not suggest the glass composition of the invention and withdrawal of the ground of rejection is respectfully requested.

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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